

Vantage Engine Receives Production Certificate

More than a year and a half after awarding a type certificate to Superior Air Parts for its 360-cubic inch Vantage piston engine, the FAA has finally signed off on the engine's production certificate. The Vantage is a 180-horsepower engine that grew from Superior's many years of making FAA-approved PMA replacement parts for Lycoming 360-series engines. The production certificate recognizes that Superior's quality control system meets the requirements of 14CFR 21.143 and will enable Superior to manufacture new Vantage engines in quantity without having FAA inspectors inspect and sign off each engine.

Superior has already delivered 15 new engines to aircraft manufacturer American Champion Aircraft for its High Country Explorer single-engine taildragger. And owners of Piper PA28s and Cessna 172s have expressed interest in a modification program to replace their original engines with Superior's Vantage Engine. "We are getting a tremendous amount of interest in the engine," said Superior president Tim Archer.

An advantage of the Vantage is that it is certified to run on autogas (91 octane, with no alcohol allowed). The engine's type certificate data sheet does mention that manufacturers installing the Vantage engine may need to conduct tests to ensure that the fuel system suffers no vapor lock "while using high-volatility fuels such as motor gasoline. The aircraft fuel system hot weather testing requirements of FAR 23.961 must be successfully accomplished for each aircraft powerplant installation design of these engines (both carbureted and



Superior Air Parts employees and Tim Archer (left), president and CEO, and Kathy Rascoe, FAA Aviation Safety Inspector, celebrate the awarding of the production certificate for Superior's Vantage engine.

fuel-injected) to obtain approval for operation with motor gasoline."

The Vantage engine is the first U.S. piston aircraft engine to be built by a new company and receive FAA certification since, Archer believes, the Franklin engine entered the market decades ago. Superior conceived the type certification program in 1999 and began the FAA type certificate application process in 2001. The long period between granting of the type certificate and the recent awarding of the production certificate was not the FAA's fault, according to Archer. While the FAA's resources are strained, he said, "the [FAA personnel] in Fort Worth [Texas] were a tremendous help to Superior to get us all the resources they could. These guys bent over backwards to work with us. I don't think we could ask for a better group." Some of the delay was due to Superior's own resources, Archer added. One big challenge was creating an entirely new quality system for the certified engine line. "It's tremen-

dously involved," he said.

One unusual feature of the Vantage is that current certification rules require a hard time between overhaul (TBO) number, which is listed in the type certificate at 1,000 hours. Older-generation engines don't have fixed TBOs, and TBO numbers are simply manufacturer recommendations unless made mandatory in operations specifications. Archer said that Superior will conduct testing to extend the TBO to the planned 2,000 hours and that once the type certificate is updated, the longer TBO will be retroactive to all Vantage engines.

The next step in the Vantage series may be derivative four-cylinder versions. Archer said that the company might explore larger engines in the future but will focus on growing the four-cylinder Vantage business first.

"It's been a tremendously exciting journey for all of us at the company," Archer said. "I couldn't be prouder of the group here, they worked their tails off to get us where we are today."